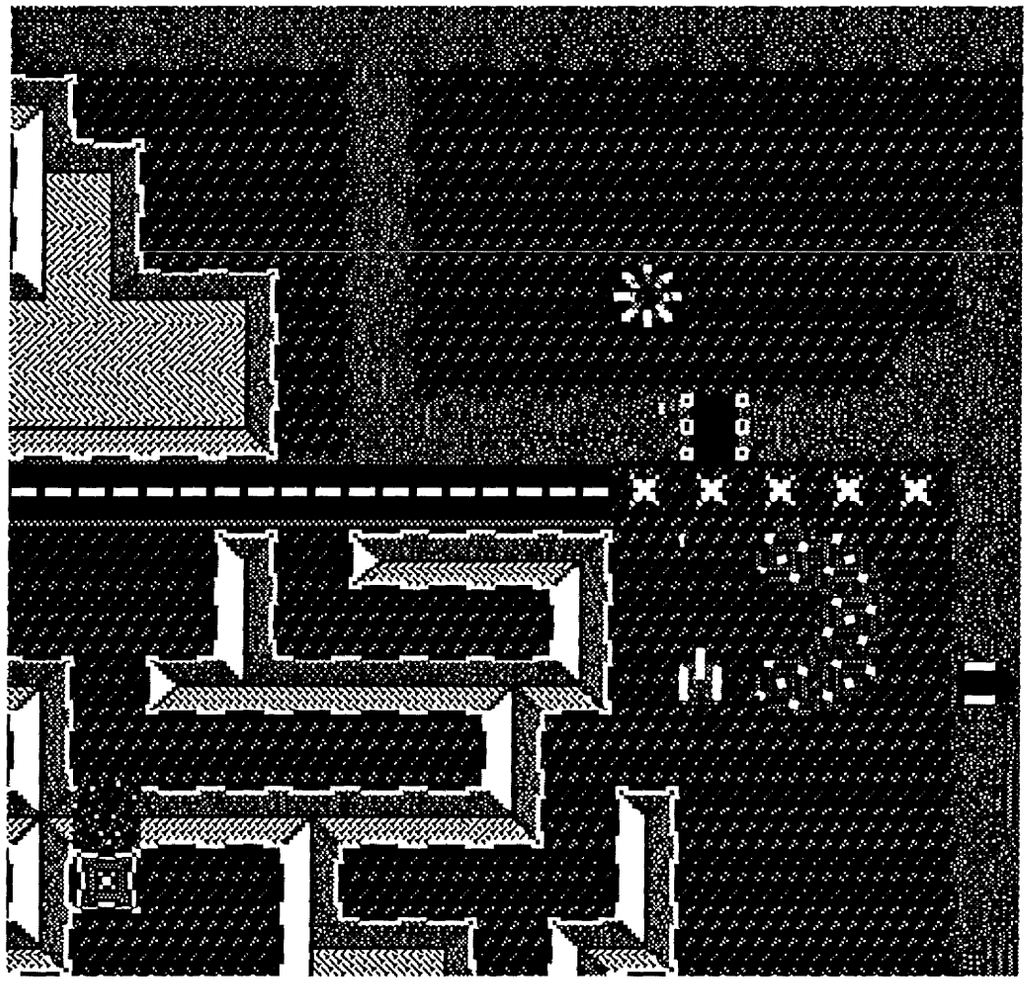
BOLO

The multi-player battle game.

(Apple Macintosh version)



History

Bolo was originally a multi-player game written in 1987 for the BBC micro[†] , a British microcomputer made by Acorn Computers of Cambridge in 1982.

Bolo has no connection with the game of the same name for the Apple II, although it is a similar game. The name is an unfortunate coincidence.

The game Bolo is fundamentally based on communication between the computers running the game, and on communication between the players working together as teams. Bolo is the Hindi word for communication.

How to get it

When Bolo is finished, it will be distributed through the normal shareware channels. Until then, people who are prepared to run beta versions can obtain it by the following means:

Within Stanford University: by Guest login on the AppleShare server "Bolo" in the AppleTalk zone "Rains".

Elsewhere: by anonymous ftp from "bolo.stanford.edu".

System Requirements

- Macintosh Plus or later model of Apple Macintosh.
- Any AppleTalk network connection: LocalTalk, EtherTalk, TokenTalk, or even AppleTalk Remote Access.
- System 6 or later.

[†] Although it cost only £235 ($400) and was 6502 based like the Apple II, the BBC micro had more in common with the Macintosh. It had its equivalents of QuickDraw, the sound manager, and an INIT loading mechanism. It supported cassette tape, floppy disks of various capacities, hard disks, and had a network file system, with the option of a quarter megabit CSMA network (called Econet) built in on the motherboard. It supported multiple additional slave processors of many different kinds, including the Acorn Risc Machine — the world's first dollar-per-MIPS processor ($27 for 27 MIPS) — which has now finally reached the USA in the form of the Apple Intelligent Assistant. Its incomparably good BASIC taught me to use functions, procedures, recursion, local variables, pointers, while loops etc. so that for years I never understood the "Goto Considered Harmful" debate — but then I had never used one, or a 'gosub' for that matter. It had inline assembler, like modern C compilers, but still provided Operating System calls to do everything, with dire warnings that IBM PC style poking the hardware would cause your program to fail on multi-processor configurations or on later versions of the BBC micro hardware. I offer my gratitude to the geniuses who created this machine which gave me my start in the computer business.

The game

The game is a tank battle set on an island, for up to 16 players, using separate computers and monitors, so that each cannot see what the others are doing. This enables players to lay minefields which others cannot see, and to hide under the cover of forest and watch (or ambush) other players without being seen.

Another important factor of Bolo is that it is not a two player game, where your objective is to kill your single enemy, but a multi-player game, where you can work as teams. In this game you are not alone when you find yourself cornered by the enemy — you can shout for help, and have your allies break cover and come out of the forest shooting, to wipe out your attackers and rescue you.

Driving the tank

The preferred keys for the right hand are the ones on the numeric keypad (NK), but if you don't have a numeric keypad (eg on PowerBook) then the alternatives on the main keyboard (KB) can be used. The key assignments can also be changed if you prefer something different.

Left hand:	
Accelerate	Q
Decelerate	A
Lay Mine	Tab

Right hand:	NK	KB
Turn anticlockwise	/	O
Turn clockwise	*	P
Shoot	0	Spac e

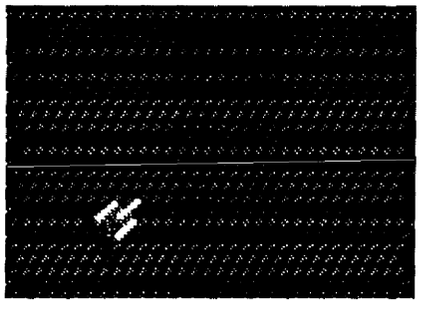
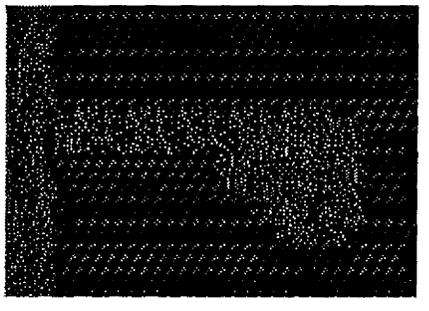
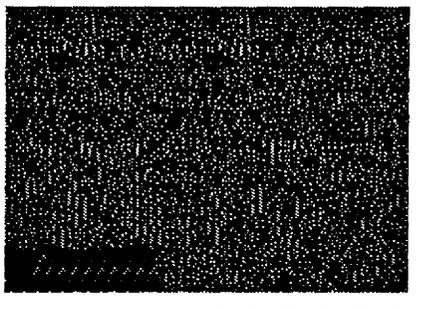
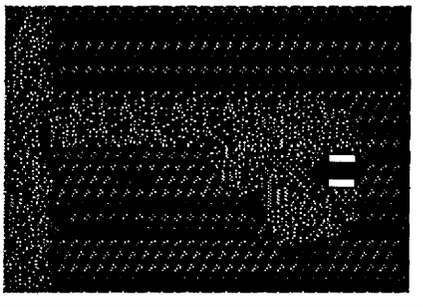
Starting the game

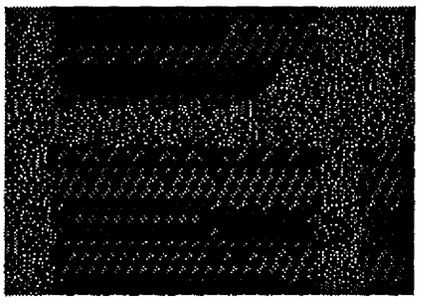
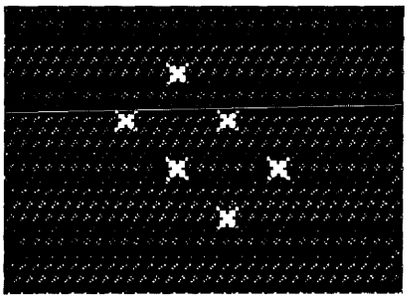
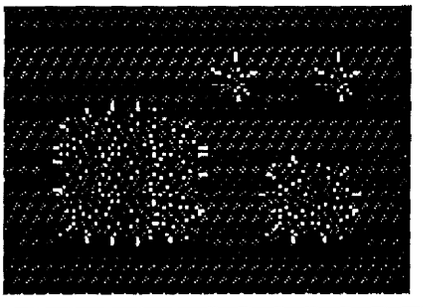
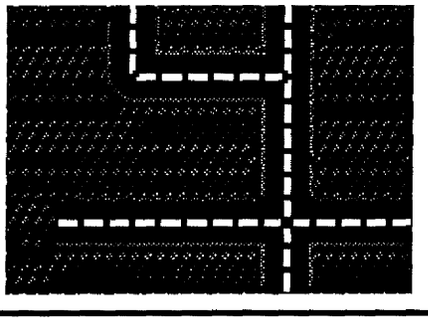
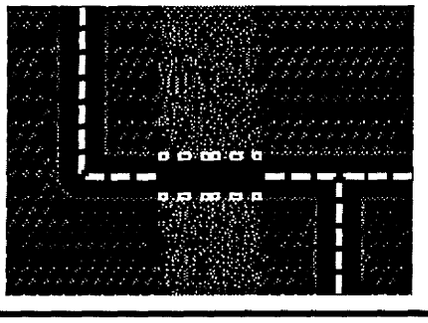
When you start the game, your tank is out at sea, on boat. You should head towards the island and drive off the boat onto the land. You may have to be going quite quickly to leave the boat.

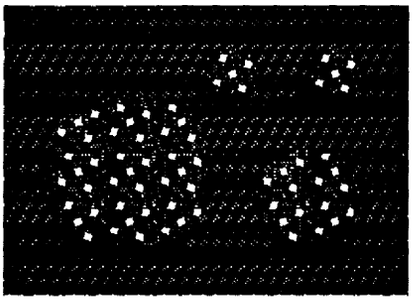
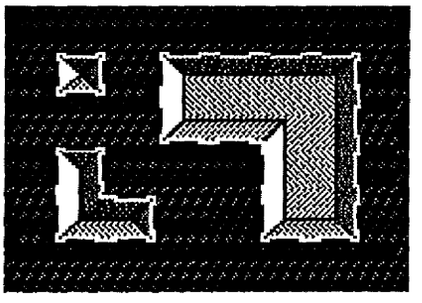
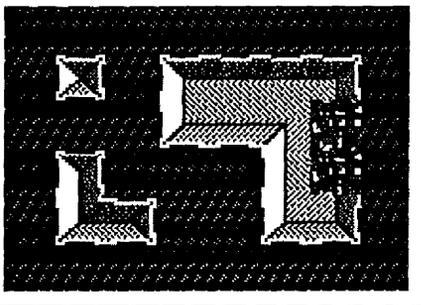
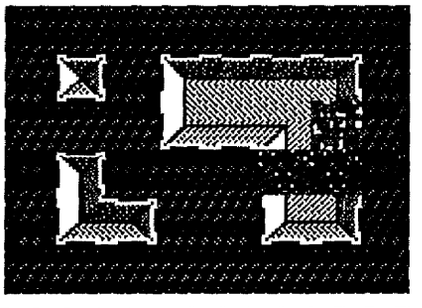
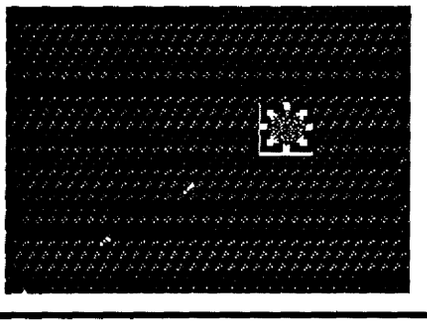
Boats can sail up rivers, but not under the low floating bridges which are laid by tanks. To pass a bridge you must either leave the boat and proceed on land or shoot the bridge to destroy it. Do not rely too much on boats as they are extremely vulnerable — they are sunk by a single hit. If you are on a boat when this happens you will be dumped into the water and will be at the mercy of your attacker. If you are out in 'Deep Sea' (water shown with dark ripples in it) then your tank will sink and be destroyed immediately — so take care!

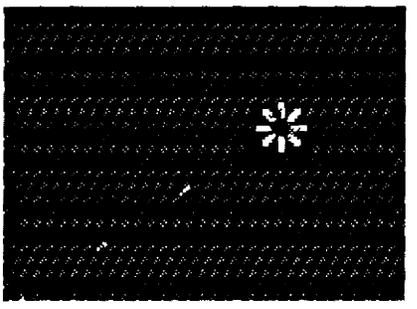
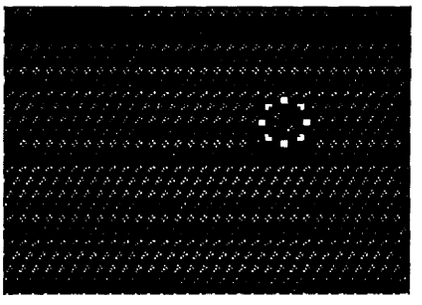
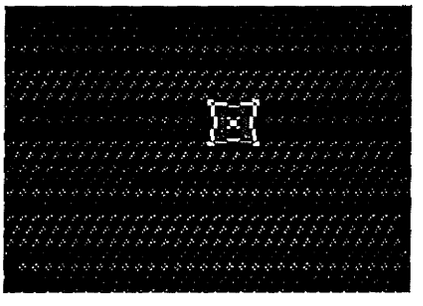
Terrain

On the island you will encounter different kinds of terrain and obstacles which have different properties.

Example	Terrain	Top speed	Special notes
	Grass	medium	Most of the island is covered with grass.
	Water	very slow (except when on a boat)	If you stay in water for too long (without a boat) then the tank will lose its shells and mines.
	Deep Sea	instant death (except when on a boat)	Don't drive your tank into deep sea without a boat — it will sink. You cannot build anything — roads, bridges, boats or buildings — on deep sea.
	Moored Boat	fast	You can drive your tank onto moored boats to travel quickly by sea.

	Swamp	very slow	Swamp is usually found in areas near to water. It looks quite similar to normal grass, but will bog your tank down, so watch carefully where you go.
	Mine		You can lay mines on any terrain (except water) and they will explode and damage any tank which goes over them.
	Crater	very slow	Exploding mines leave craters in the ground. Craters adjacent to water will flood.
	Road	fast	Build roads where you expect to travel frequently.
	Bridge	fast	Build bridges over rivers you expect to have to cross frequently so that you won't lose shells and mines by driving through the water.

	Forest	slow	If your tank is completely enclosed in forest, surrounded on all sides, then other players and pillboxes will not be able to see you. Forest is also used to provide building materials.
	Buildings	none (barrier)	You can build buildings to make a barrier and provide cover from enemy fire.
	Damaged Building	none (barrier)	If you shoot a building then it becomes damaged.
	Rubble	very slow	If you shoot a building repeatedly then you can reduce it to rubble which you can drive over, but only very slowly.
	Pillbox	none (barrier)	Pillboxes shoot at any enemy tanks which come into range. You can capture them to make them loyal to yourself, and shoot your enemies for you.

	Damaged Pillbox	none (barrier)	When you shoot a pillbox, it becomes damaged, and you can estimate how damaged it is from its appearance on the screen.
	Dead Pillbox	medium	If you completely destroy a pillbox, then it becomes inactive, and you can drive over it to pick it up.
	Refueling base	medium	Refueling bases provide your tank with more shells, mines and armour.

Pillboxes

Once on land you will encounter automatic pillboxes which shoot at any enemy tank which comes within range. They are very accurate, and, when provoked, can fire very rapidly, so beginners should think twice before carelessly attacking one. In a straightforward confrontation, with a tank and a pillbox both firing at each other as fast as they can, a pillbox will win every time. To destroy a pillbox requires more subtlety. You must attack it quickly, score a few good hits, and then turn and run to get out of range before it has time to destroy you. Be patient, stay away from pillboxes unless you have full armour, and always remember the option of hiding in the forest when confronted by pillboxes or hostile players. Remember also that there is no reason why you should kill a pillbox in one go — after damaging it, you can go to a refueling base to replenish your shells and armour, and then come back to finish it off.

Pillboxes can never be totally destroyed, just disabled. When you are confident enough, you should try to do this, because then you can drive over the pillbox and pick it up. It will be repaired, and will become loyal to you and your allies. Later,

when a suitable location is found, it can be placed back onto the map and left to attack enemy tanks. This is the key to the game — not fighting the other players yourself — but claiming a territory for yourself and using the pillboxes to defend it against other players.

Refueling bases

Tanks enter the game with limited shells and mines, so the first thing you must do before you can attack pillboxes or other tanks is find a refueling base to replenish the tank's supplies of shells, mines and armour. Most bases are defended by nearby pillboxes, but there are a few which are isolated and easily accessible — it is up to you to explore the map and find them.

On the right of the screen you will see an indication of the stocks of shells, mines and armour of the nearest refueling base to your tank (if there is one nearby). When you drive onto the base, you will see the stocks go down as your tank is refueled. The base will slowly replenish its stocks automatically. The base will also be automatically captured, and will become loyal to you and your allies. An enemy tank cannot drive onto your base to refuel, although it can shoot your base and deplete the armour that it has. When the armour is all gone, there is nothing to stop the enemy tank from driving onto your base and capturing it.

The object of the game is, eventually, to have captured all of these refueling bases.

Alliances

At first, when you capture a pillbox for yourself, it will shoot at **all** other players. When there are several people playing, one person does not have much chance of winning on his own, so you will want to work as a team with some of your friends. So that your pillboxes know not to shoot at your friends, a formal alliance must be declared. This is done by grouping the players' tanks close to each other in one place. **Each** player selects "Request Alliance" on the Bolo menu. Then **one** player selects "Invite new allies" and all the players are joined together in an alliance. If you are already in an alliance, you must select "Leave Alliance" first before you can join a new one.

Members of an alliance can also see each other's mines as they are layed, (this does not apply to mines layed before the alliance was formed — they remain secret.)

At any time, a player may opt to leave the alliance simply by selecting "Leave alliance" and he is then on his own. Any pillboxes he is carrying at the time are his, but any active ones on the map remain with the members of the alliance.

Any member of the alliance may also invite a new member in at any time. To do this, the newcomer must select "Request Alliance" first. They place their tanks close together and the alliance member selects "Invite new allies" to bring in the new member.

If two people decide that they wish to 'go it alone' and break free from their previous alliances then they should **both** leave their old alliance(s), and then one selects "Request Alliance" and one selects "Invite new allies" to begin a new alliance.

Note: once you have selected "Request Alliance" you become eligible to join any other alliance. If you do not wish to join any other alliance then you should select "Cancel Request" to prevent another player from making you an involuntary ally.

Building a fortress

Players should pick a location in which to build a home base. The art of building a secure fortress is an important skill to be learned, and different players favour many different design strategies, but one common feature is that all bases rely on pillboxes for defence. Care must be taken in the placement of pillboxes so that they give each other adequate covering fire (a pillbox left alone at the corner of a base will be picked off easily by attackers) but they must not be placed too close or they risk hitting each other by accident when firing at the enemy.

Other common features of fortresses are thick walls of buildings around the edge, large areas of Tar-Mac in the centre, and invisible minefields hidden around the approaches. Minefields are invisible to everyone except the player who laid them and his allies.

When mines explode, they leave craters which will slow down any tank which tries to drive through them. An exploding mine will also set off any adjacent mines — so a long line of mines will all go off together in a chain reaction. If you don't want this to happen, you must lay mines in a checker-board pattern so that they don't set each other off. Craters adjacent to sea or river will flood with water, so setting off a long line of mines leading to the sea will have the effect of creating an artificial river. Using this method, you can create a moat around your fortress. As well as slowing down tanks, water also damages any shells and mines carried by the tank, so any tank caught in your moat will soon be helpless.

Players may also take advantage of natural features such as swamps around the base to slow down the approach of attackers. Forest slows down the approach of tanks too, but this benefit is more than outweighed by the fact that tanks cannot be seen whilst they are under the cover of trees, and this enables enemy tanks to make surprise attacks. This means that a fortress surrounded by forest is extremely vulnerable.

Unfortunately, you *need* forest in order to get the raw materials you need for making buildings, bridges and roads, so a fortress positioned well away from the nearest forest is also vulnerable because you will not be able to make the necessary repairs to keep it secure.

Mine Laying

You can lay mines in two different ways — by sending the man out to bury them (see "Farming and Building" below) — or by just dropping them onto the ground where the tank stands by pressing the 'Tab' key. This can be quicker, but all other tanks which are near to you will see mines that you lay this way.

If you're out of shells and low on armour and being chased along the road by an enemy tank, then don't assume that you can kill him just by dropping mines in his path, because he will see mines you lay this way and will be able to avoid them.

Mine Clearing

It is not normally necessary to change the range of the tank's gun, since shells hit the first obstacle in their path anyway. The time when you may want to control the range manually is when you want to deliberately land a shell on top of a mine to set it off. You can also use this if you suspect that you are near to an enemy minefield. Change range and fire at the same time and you will saturate a path in front of the tank and set off any mines which may be there.

If you want to use these features, the targeting controls work like this:

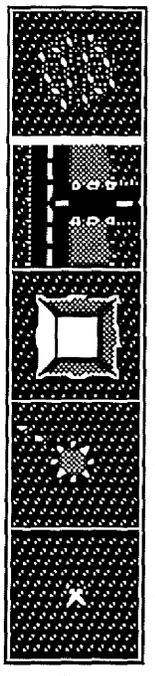
Press [+] once to turn on the targeting cursor.

Press [+] again to bring the cursor nearer to the tank (shorter gun range).

Press [9] to move the cursor further away from the tank (longer range).

Press [9] again when the cursor is at maximum range to turn it off.

Farming and Building



To build, first select the mode you require by clicking on the appropriate button on the left side of the screen, and then click on the map.

A man will leave the tank, run to the square, build the required object, and return to the tank. You can only build if you have sufficient building resources, so you will need to farm trees first before you can build anything. Building a **road** or **bridge** or **building** costs you $^1/_2$ a tree from the tank inventory and building a **pillbox** requires a whole tree. **Boats** are expensive — they cost five trees to build.

Some other restrictions: You cannot build on deep sea, on a moored boat, or on forest (farm it or shoot it down first).

You can also repair a damaged pillbox by selecting 'Pillbox mode' and putting the cursor on top of it. Instead of putting down another pillbox, the man will repair the one which is already there — even if it belongs to someone else, although you probably won't want to do this normally. He may take up to whole tree, depending on how damaged the pillbox is.

Laying mines this way is an alternative to using 'Quick' mines. It does take slightly longer, but has the advantages that you don't actually have to drive the tank to the place to lay the mine, and that the mines you lay are invisible even if someone is watching you while you do it.

Your computer informs your allies' computers whenever you lay mines, so that they can be marked on their maps. Once they are marked, they are never erased, even if you break the alliance. Of course, any mines you lay *after* the alliance is broken are not shown on their maps, nor are any you laid *before* the alliance was formed — only those laid during the time you were actually in the alliance.

If the man gets shot by another player while outside the tank, you will not be able to build any more. A new man will be parachuted in for you, but this may take several minutes, during which time you will not be able to build anything.

Forests grow all the time, so trees you farm will be replenished slowly.

The Screen

The Info Boxes on the right hand side of the screen show the status of the various tanks, pillboxes and refueling bases in the game. The screen display is complicated but learning the simple colour conventions should make it easier to understand:

A **red square** indicates a **hostile** tank/pillbox/base.

A **green circle** indicates a **friendly** tank/pillbox/base.

A **hollow circle** is a special case of the green circle (friendly) which indicates **your own tank** in the Tank Info display.

Each icon also has a **shrunken version** which indicates a pillbox which is currently **being transported** by a hostile tank, a friendly tank or yourself, respectively.

At the start of the game, all pillboxes are indicated by red squares because they are all hostile to you, but the drawn in a chequer-board pattern. This enables you to distinguish between pillboxes which are just hostile to everyone because no-one has captured them yet, and pillboxes which are actively hostile because they are now loyal to an enemy tank.

Similarly, all refueling bases are initially friendly so they are indicated by a green circle, but the circle is drawn in a chequer-board pattern. This is so that you can tell the difference between bases you actually *own*, and bases which are just friendly because no-one else has captured them yet.

Similar colourings are used to identify objects you see on the map:

Tanks are identified by the colour of the turret. **Red** indicates a **hostile** tank, and **green** a **friendly** one. To make sure you never get confused when there are a lot of tanks on the screen, **your own tank** is always marked by a **black turret** to make it stand out clearly.

Refueling bases are initially shown with a dotted pattern, which becomes green when you capture them. In a hostile refueling base the marking is red instead.

You can tell whether a pillbox is hostile by looking at the colour of the guns sticking out of it. Hostile pillboxes have **red** guns, friendly ones are shown with **green** guns. You can also by looking at a pillbox is how damaged it is, and this will give you some idea of how many more hits are required to destroy it.

Remote views

[" '] Select 'Pillbox View' [Return] Normal 'Tank View'

If you leave your base defended by pillboxes and go out attacking someone else, you may be worried that your own base could be under attack itself. You can check by occasionally switching back to a 'Pillbox View'. Each press of the pillbox view key cycles to the next pillbox which is owned by you (or your alliance).

Notes:

- The game is complicated, so there is no need to try to do everything the first time you play. To get the feel of the game, just find a refueling base and get some shells, shoot at each other a bit, and perhaps lay a few mines. As you play the game however, you will begin to discover that the key to success is not just fast reflexes and a good eye for aiming in one-to-one combat. Team-work counts. However good a player is at combat, if he suddenly runs into three allied tanks coming through a forest together, then he will not have much of a chance. Eventually, when permanent bases begin to be set up, planning and strategy become vital. The player who is still running round the map using mercenary 'if it moves kill it' tactics will find more and more that he can't get near to the enemies he wishes to attack because they are inside their fortresses, behind rows of accurate and deadly pillboxes.

- Many players have problems driving the tank when they first play because they continually hold down the 'Q' key to try to make the tank go as fast as possible, especially when the tank is slowly plodding through marsh or water, and they want to get out quickly. What actually happens, is that as soon as they reach the road, the tank accelerates and they go flying off the other side of the road into the marsh again. **Don't hold 'Q' down!** Drive onto the road slowly, turn the tank round to face in the direction you want, and **then** press 'Q' to speed up.

- When you come out of water, remember that you may have lost shells and mines, so check your inventory before you start shooting at anyone!

- Remember that you can hide in forest. You can use this both to make surprise attacks, and to flee when being chased. If an enemy tries to chase you into forest, then he will probably waste most of his shells blowing trees away and it is likely that you will receive very little damage.

- Remember that repairing a dead pillbox with your man **never** claims ownership of it for you. To claim ownership you must pick it up with your tank first.